Remarks

The Examiner's attention to the application is noted with appreciation. Claims 1-5 remain pending. Claim 6 is cancelled. Claims 1-5 are amended. New claims 7 and 8 are added.

The specification is amended to correct typographical errors; no new matter is added.

The Examiner alleges a defect in Applicants' claim of priority to a previous application, Serial No. 10/161,249 filed May 31, 2002. Applicants provisionally waive any claim of priority to the previous application.

Claims 1-3 stand rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,482,112 to Sasaki et al. The rejection of claims 1-3 is overcome by amendment. Claim 1 has been amended to recite that the "step of defining a first area-in-flow comprises defining a *ratio* of the first area-in-flow to the second area-in-flow *to be between about 1.3 to 1 and about 1.7 to 1*. (Emphasis added.) Discussion of this range of limitations is provided at page 11, lines 9-23, of the Specification. This claimed range of ratios, corresponding to a range of between about 58.8% and about 76.9%, is in marked contrast to the proportions taught by Sasaki, et al. The corresponding ratio range taught by Sasaki et al. is 30% to 60%. Sasaki et al., col. 3, line 59 to col. 4, line 11; col. 5, lines 7-9.

This distinction is due at least in part to the differing functional regimes of the respective devices. The Sasaki et al. device, expressly characterized and described as a "condenser," deals with a flowing medium undergoing a phase change. The medium to be condensed starts out at the inlet as a gas and flows from the device as a liquid. At Sasaki et al.'s inlet side, the flow area must be proportionally large to avoid a high gas velocity and the resulting high pressure drop. At the exit, the medium has undergone a phase change, greatly reducing in volume and thus permitting a greatly reduced flow area.

In the presently claimed invention, however, the fluid remains a gas (e.g. a hot exhaust gas) as it traverses the exchanger. Although the density decrease in this gas due to cooling allows for some decrease in area-in-flow, the drastic reduction taught by Sasaki et al. — where the outlet area-in-flow may be is little as 30% of the "first-pass" area-in-flow — would in the present invention result in an excessive pressure drop in the flowing gas. A purpose of the

claimed method is to maintain a relatively high gas flow velocity to minimize fouling in the apparatus.

Claim 1 also has been amended to recite a "gas" instead of "fluid", and slightly to improve claim format.

In summary, therefore, claim 1 as amended requires the second area-in-flow to be (when the claimed ratios are converted to percentages) between about 58.8% and about 76.9% of the first area-in-flow. This ratio range is quite different from the corresponding range indicated in Sasaki et al., and the rejection of claim 1 (as amended) over Sasaki et al. is overcome. Claim 2 depends from claim 1 and thus also is allowable.

Claim 2 has been amended to recite an embodiment of the invention wherein first and second pluralities of exhaust gas passages are provided within the plenums. Claim 2 as amended thus more particularly points out and distinctly claims subject matter which Applicants regard as their invention. It is observed that Sasaki et al. do not appear to teach the provision of exhaust gas passages within the multi-pass plenums.

Claim 3 has been extensively amended, and much of its subject matter imported into claim 2. Claim 3 has been amended to claim an embodiment of the invention including the step of "separating the first-pass plenums from the subsequent-pass plenums with at least one elongate divider substantially perpendicular to the plenums." Applicants invite attention to the fact that the "dividers" in the Sasaki et al. device, which segregate flow into the inlet (A), intermediate (B) and outlet (C) groups, are *parallel* to the plenums, not perpendicular. Accordingly claim 3, as amended, is plainly allowable over Sasaki et al.

Claims 4-6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' admitted art in view of Sasaki et al. The rejection of independent claim 4 is overcome by amendment. Claim 4 as amended recites the limitations of "defining a first area-in-flow" and "defining a second-area-in-flow," "whereby a ratio of the first area-in-flow to the second area-in-flow is between about 1.3 to 1 and about 1.7 to 1." The claimed ratio range for the first area-in-flow to the second-area-in-flow is taught or suggested neither by Sasaki et al. nor by the admitted prior art. Claim 4 thus is allowable for essentially the same reason as argued

hereinabove that claim 1, as amended, is allowable. Claim 5 depends from claim 4, as amended, and thus likewise is allowable.

Claim 5 has been amended to recite an embodiment of the invention wherein pluralities of exhaust gas passages are provided within the plenums. Claim 5 as amended thus more particularly points out and distinctly claims subject matter which Applicants regard as their invention.

New claims 7 and 8 are added to more distinctly claim subject matter which Applicants regard as their invention. The new claims are directed to the "cross-flow" embodiment of the invention depicted in Applicants' drawing Fig. 2. In this regard, Applicants note that claims 1 and 2, as amended, are generic to all embodiments of the invention. Claim 3, as amended, is directed to the "cross-flow" embodiment of Fig. 2. Claims 4 and 5 as amended are directed to the "folded flow" embodiment of Applicants' drawing Fig. 3.

In view of the foregoing amendments and remarks, the reconsideration and allowance of the claims, as amended, is respectfully solicited.

Respectfully submitted,

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